

VOL. VI, pp. 173-238, pls. 50-54

DECEMBER 29, 1924

THE
NATIONAL GEOGRAPHIC
MAGAZINE



WASHINGTON
PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY

Price 50 cents

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THE
NATIONAL GEOGRAPHIC MAGAZINE

THE FIRST LANDFALL OF COLUMBUS

BY

JACQUES W. REDWAY, F. R. G. S.

In examining the evidence concerning the first landfall of Columbus on the shores of the American continent, but little attention has been given heretofore to the evidence that might be found in early maps. Most critics have attempted to solve the problem by plotting the course either forward or backward as might seem most expedient. A few historical writers have been content to brush aside all evidence save that contained in the log book, trusting to logical inference where positive evidence is wanting.

But logical inferences are of value only when there is something like unanimity of agreement, and thus far, with respect to the landfall, they have resulted, not in unanimity of agreement but in diversity. By such inferences Washington Irving fixed upon Cat Island; Muñoz believed it to be Watling; Nacarroto held it to be Grand Turk; Beecher, Parker, Murdoch and Markham clewed sails off various parts of the coast of the present Watling; Captain Fox kept the anchors fast to the catheads until the squadron crept into a lee bight on the south side of Samaná, and Varnhagen let go those same anchors off the reefs of Mariguana.

At the present time, however, but three islands are seriously considered—Mariguana, Watling and Samaná—and the opinions

having the most weight are those of trained seamen. In the following pages I have endeavored to discuss the merits of the two prevailing opinions from a geographic standpoint, making use not so much of a modern chart as of the evidence contained in certain maps of the fifteenth and sixteenth centuries.

There is but one source from which information concerning the first landing-place can be obtained, and that is the log book. Ever since navigation of the sea began it has been the custom to keep this official record of the voyage with the utmost fidelity, for a falsely kept log is an abomination that nowadays will subject the master of the vessel to the severest penalties. In his private log book, the only one whose contents are now known, Columbus admits that he understated the daily run of the caracca *Santa Maria*, but he says that he thus falsified his quasi-official log in order to keep a mutinous crew in subjection. The deception practiced on his crew, however, was a subterfuge that could have misled no one but an ignorant sailor; it could not have deceived the brothers Pinzon, the masters of the two caravels, for they were quite as skillful navigators as Columbus. The private log must have been reasonably correct, therefore, or it would have been exposed by the enemies of the Admiral.

Unfortunately, this document has disappeared and it cannot now be found. All we know of its contents is contained in an abridged and interpolated copy made by that grand old soldier-priest, Las Casas. From the date of October 10, however, the log seems to have been copied in full, and mainly in the *ipsissima verba* of the Admiral.* The interpolations, however, are generally apparent; but, good, bad or indifferent, about the only knowledge we possess is contained in this abridged log, and whatever conclusions one may reach concerning the locus of the landfall and the courses between Guaimaní and Cuba, it must stand or fall accordingly as it agrees or disagrees with Las Casas' abridgment. The map of Juan de la Cosa affords no tangible evidence; Columbus' letter to Luis Santangel contains no allusion to the matter.

One might think that with the log and a good chart the estab-

*Apparently Señor Chastelar, in his serial article published in the Century Magazine, 1892, has not appreciated the fact that only a part of the log is in the words of Columbus. He quotes freely from Columbus, seemingly oblivious to the fact that much of the material quoted is not the language of Columbus, but that of Las Casas.

lishment of the squadron's course would be an easy matter, but unfortunately this is not the case. At that time there was no instrument sufficiently precise to establish a ship's position to within two or three degrees.* Moreover, in the entire log book there are but one or two references to latitudes, and these are not exact enough to establish anything. Still another difficulty in the way is the variation of the compass. At that time a variation was known to exist, but, a few declinations excepted, no values had been determined. Columbus, indeed, found that his declination was changing, but he did not establish any values.† A change of twenty degrees or more in declination, during the voyage, even if the Admiral had allowed for it, would have made the retracing of the course a difficult matter.

The fact that Columbus did not write well in the Spanish language adds to the difficulty also. He did not punctuate, and many of his sentences are so ambiguous that it is impossible to tell their meaning. For instance, in the journal of Sunday, October 14, he says: "At the break of day I commanded the gig of the ship and the boats of the caravels to be [lowered] and went along the island in a north-northeasterly course to see the other part which was to the other part of the east."‡ This particular passage is so perplexing that at least three different points of Watling island have been selected as the first anchorage.

Within a few years research has narrowed the six islands above named to the three already noted—Watling, Mariguana, and Samaná. Watling island was first proposed by Muñoz, but it is very uncertain that the Watling island of Muñoz is the one at present bearing that name. On the contrary, if the maps of Sayer (1792), Jacobez (1821) and the so-called map of Vallard (1547) are worth anything as evidence, the Watling island of Muñoz lay to the southeast of the island at present bearing the name Watling. In fact, this island had the relative position that Samaná now occupies.

* Vasco da Gama used to go ashore and fix a cross-staff on the beach when he wished to find his latitude.

† At the port of Gomera, at the time Columbus sailed, the declination was about 20° E.; at the crossing of the thirty-fifth meridian it was not far from 10° W. At Grenada it could not have been more than two or three degrees. The azimut, or line of no declination, now passes within a few miles of Samaná.

‡ See note on page 154 for the quotation from the log book.

In his day, Las Casas says that the island which the natives called Guanahani and Columbus renamed San Salvador, was known by the name of Triango. After a diligent search, however, I find no map bearing this name earlier than the third decade of the sixteenth century. This is the famous Weimar map, but unfortunately on this map the names both of Guanahani and Triango appear, the latter an islet a little to the eastward of Guanahani. Both names also appear on several other maps published during the next fifty years, and in the map of Sebastian Cabot (1544) an island, Triangulo, is found bearing the same relative position that Triango holds on the Weimar map. The name also appears on the maps of Gutierrez (1550) and Santa Cruz (1560). The name "Triangulo ou Watling" occurs on an anonymous map in the collection of R. and I. Ottens.* On this map Guanahani also occurs as a separate island.

In 1856 Captain Recher, Royal Navy, discussed the question exhaustively, taking the ground that the present Watling † was the locus of the landfall. His researches forever put an end to any lingering belief that Cat Island was the San Salvador of Columbus. His views have been ably supported by the late R. H. Major, Lieutenant Murdoch, United States Navy, and more recently by Captain William H. Parker, formerly of the United States Navy. Captain Parker combines the qualities of a trained seaman with those of a critical scholar. He spent many years in the West Indies and in Spain, and having had access to all papers and documents bearing upon the question, stands in the ranks of the foremost authorities.

Mariguana or, more properly, Mayaguana island has been pointed out by Varnhagen as a probable site of the landfall. It lies in an east-and-west direction, and its shores are broken by spits and coves; but Varnhagen not only ignores the fact that on leaving Guanahani the squadron sailed to the southwest, he omits from his thesis the Admiral's declaration that on the morrow he should sail to the southwest. Varnhagen lays the course due west and anchors the squadron on the windward side of Acklin island (‡).

In 1880 Captain Gustavus V. Fox, United States Navy (in 1894 Assistant Secretary of the Navy), published a critical review of

* *Nova Tabula Rabilione Insularum Cuba et Hispaniolae*. Amsterdam. (I am unable to give the date. There is a copy in the British Museum.)

† Named from a pirate of the seventeenth century.

the various monographs bearing upon the subject. At the same time he offered a carefully prepared array of evidence in favor of San Juan or Atwood Cay. Owing to the fact that it was published in a government report,* the monograph did not then receive the attention it deserved, and for ten years it was popularly unknown; lately, however, it has commanded much interest. In his *Discovery of America*, Mr. John Fiske adopts Captain Fox's views, and Mr. Henry Harrisse, though rather inclining to Acklin island, practically admits that Captain Fox has come nearer to the truth than any other critic.

From the nature of the case it is evident that the question cannot be settled without the aid of the trained seaman. It is equally evident that the problem comes within the domain of the geographer, the cartographer and the historian. No solution will be satisfactory, therefore, that does not meet the conditions imposed by each of these sciences. Several historical papers that have recently appeared have been mercilessly ridiculed because of their failure to comply with the conditions demanded by the navigator. The sailor, on the other hand, is not always beyond criticism in discussing questions belonging to history or to cartography. Herr Cronau,† a historical writer, for instance, who, in 1890, took the trouble to visit the Bahama islands, declares that he had no difficulty in identifying Kaling rocks, on Watling island, as the spot where Columbus landed. Here is a statement that for verbal simplicity has scarcely an equal in historical literature. Had he divided the entire coast of the Bahama islands into five-mile stretches, he could have identified sixty per cent of them with equal facility. Neither Bocher nor Parker succeeded in accomplishing such a wonderful feat, and Herr Cronau has the credit of it all to himself. It may be casually added, however, so very like one another are stretches of coast that, in spite of lighthouses and profiles, scarcely a day passes that masters and pilots of long experience are not deceived. Indeed, there are but few harbors that have not either a "false" entrance or a "false" namesake. Herr Cronau also asserts that Watling island is the only one answering to all the

* Report of the United States Coast and Geodetic Survey, 1880, Appendix 18.

† In a summary of Herr Cronau's paper, published in the *Magazine of American History*, March, 1892, President C. K. Adams, of Madison University, endorses this view.

distinctive features enumerated by original authorities, and that "in following the course from Watling there is no difficulty in identifying all the islands at which the fleet stopped." Such a statement is simply ridiculous; if it were true, all dispute about the matter would have ended long ago.

This writer also makes much of the assertion that the island contained a large interior lake. As a matter of fact, however, Columbus makes no such assertion. He says there was a large lagoon in the middle; but a lagoon is one thing and a lake is quite another.* Even Captain Koeber falls into this error, a piece of carelessness for which Captain Fox takes him to task. Herr Cronau also criticises Kettell's translation of the passage in which Columbus states that, with the boats of the ships, he took a north-northeasterly course to see the other side.† He translates this perplexing passage, "I skirted along the coast towards the north-northeast in order to explore the other part of the island, namely, that which lies to the east." Now this may, or it may not be what Columbus meant; it certainly is not what he wrote, and Herr Cronau's guess is no better than that of any other student.

Mr Clements K. Markham in reviewing the question does himself injustice by a few expressions which are certainly ill-chosen. In a very scholarly article he says, concerning the first landfall: "If the materials from the *Journal* were placed in the hands of any midshipman in Her Majesty's navy, he would put his finger on the true landfall in half an hour." Such a statement as this most certainly will not do. Could the question be so easily settled as all this, it would not have been a bone of contention for more than a century. Furthermore, Mr Markham says: "It is obvious that, if we trace these bearings and distances backwards from Cuba they will bring us to an island that must necessarily be the Guanahani or San Salvador of Columbus. This is the sailor's method."‡

But what sailor has yet been able to accomplish this problem so suitable for a royal midship's recitation exercise? Where on the coast of Cuba is the place at which the Admiral landed? How much and in what direction was the squadron carried out

* "Y una laguna en medio muy grande." Log book, October 12.

† En amarrándose unido al costado el botal de la nao y las lanchas de las carabelas, y fue al largo de la isla, en el camino del norondeste, para ver la otra parte, que era de la otra parte del Este. Log book, October 14.

‡ Proceedings of the Royal Geographical Society, September, 1892.

of the course by the winds, by the tides, by the swift currents of the West Indian seas? What was lost or gained in latitude and departure in all the many times the vessels were standing off and on? Of all the places in the West Indies at which the squadron anchored, but one, Port Navidad, is known. Here the caracca *Santa María* was wrecked, and forty-two men picked from the crews were left to guard the stockade built from the wrecked vessel. The impression obtains that Puerto Nipe was the first place in Cuba at which the squadron touched. Navarrete takes this view, and so do Captains Becher and Parker. As a matter of fact, there is not a scintilla of evidence to establish such a statement. The Admiral states specifically that there were but twelve fathoms of water in the harbor in which the squadron anchored. But in the roadstead of Puerto Nipe there is a depth of from twenty to thirty-five fathoms, while in the gut through which it opens into the sea there are nearly twice twelve fathoms of water; in the deepest part there are about forty fathoms. Now an estuary into which several mountain torrents are pouring might possibly silt itself up from thirty-odd fathoms to twelve; it could not well scour itself out from twelve fathoms to thirty. Moreover, the course from Islas de Aves to Puerto Nipe would have been two or three points east of south, but according to the log Columbus lay the course south-southwest, and the westerly current would have carried him still farther westward. Had Messrs Becher, Markham, and Parker considered Puerto Padre as the first anchorage on the coast of Cuba there would have been fewer inconsistencies to explain away.

And this brings me to a statement in Mr Markham's interesting paper that I wish chiefly to consider. He says:

When we warmly applauded the clear reasoning of Major's paper we supposed that the question was at length settled; but as time went on arguments in favor of other islands continued to appear, and an American* in high official position even started a new island, contending that Samaná was the Inoahall. But Fox's Samaná and Vornbarger's Mayaguana must be "ruled out of court" without further discussion, for they both occur on the maps of Juan de la Cosa and Herrera, on which Guanahani also appears. It is obvious that they cannot be Guanahani and themselves at the same time; and it is perhaps needless to add that they do not answer to the description of Guanahani by Columbus and meet none of the other requirements.

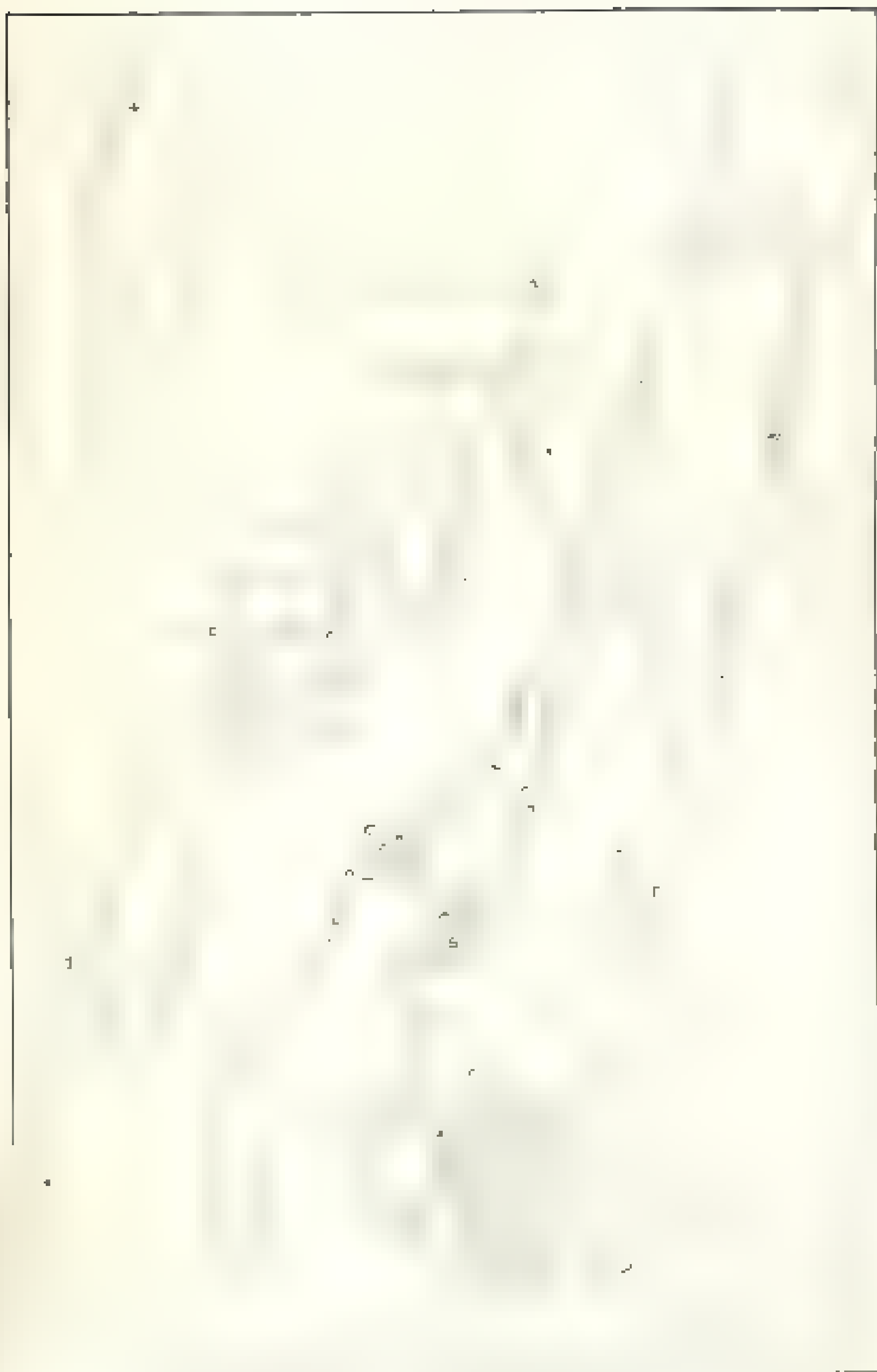
* Captain Gustavus V. Fox.

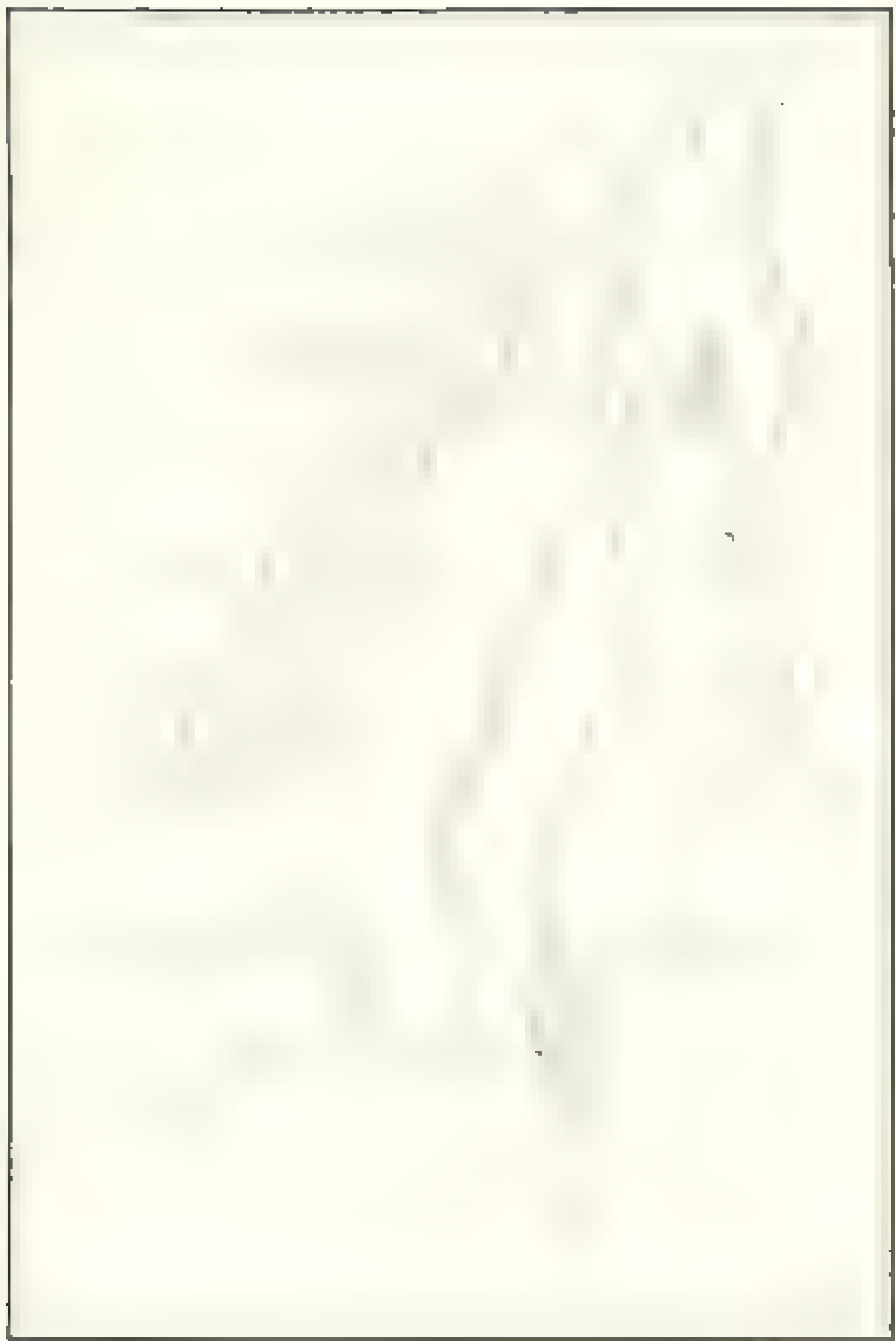
Now, if Samaná must be dropped without discussion because it appears on a map on which Guanahani also appears, Watling Island must also be dropped for the same reason, for it appears with Guanahani on the map of H. and L. Ottens, and on at least half a score of other maps, probably contemporaneous, that the author has examined in the British Museum.

But at the risk of being "ruled out of court" myself, I shall attempt to show that not only can Samaná be Guanahani and itself, but also that for one hundred years or more Samaná was Guanahani and itself at the same time. In the first place, let us look at the map of *la Cosa** (see plate 10). On this map it will be observed that the name Samaná may apply to any one of three islands. It is about as near to Guanahani as either of the others, though it is hardly possible to decide upon which it is intended to apply. Incidentally it may be noted that the island which *la Cosa* marks Haiti is not the one at present bearing the name. That name, in fact, has been transferred to the island Columbus named *la Española*. Moreover, the transference of names on early maps was by no means an uncommon thing. If Johann Schöner had not carelessly transferred the name "Parus" from the Spanish main to Mexico, instead of putting the rightful "Larab" there, it is doubtful if the northern part of the western continent would have been called America. An inspection of a very few maps of the sixteenth century will show that the transference and reduplication of names was made in a wholesale manner.

The map of Herrera (see figure 1), upon which Messrs Major and Markham lay so much stress, furnishes but little evidence not found in the map of *la Cosa*, and although nearly one hundred years later, it is hardly more than a copy of the latter. The most notable difference is in the shape of Guanahani. The east-and-west position by which the Admiral describes it and which it has on *la Cosa*'s chart has been changed to a north-and-south trend. Furthermore, it is no longer northwest of the island of Somoto, but almost due north. The island of Samaná on the map of Herrera has the same distance and bearings from Somoto that Guanahani has on the map of *la Cosa*. Just why Messrs Major and Markham place so much confidence in the map of

*The critical part of this map has been traced by the author, copying not only the outlines as found, but inserting their names also, each in the place it occupies on the original.





the army for a certain period, or thereafter for a certain time, or to hold himself responsible for such service. The wisdom of such a law, in view of a possible uprising of the samurai, was signally proved by the serious outbreak which occurred in Japan in 1877. The result of that rebellion set at rest forever the question of rule by a military class in Japan.

The reorganization of the whole fabric of government in 1888 was certainly the best one of the period, ever met with. The requirements were altered in accordance with an actual state.

Foreign advisers were employed to assist in the work, but no effort or expense was spared to create a system which would be at once modern, yet to be so adapted as to be national.

It is well not to permit oneself to weary yet to recount what was done. A few instances will serve to illustrate what was done.

The government recognized the importance of education to themselves and to the masses. A complete system of a national instruction was established in every part of the empire, beginning with primary schools in every hamlet, then gradually the normal and other more advanced institutions, up to the university at Tokio. Hospitals were introduced, and especial attention was paid to education in the new language. Nor was any distinction made between the sexes, and schools were established for the education of women as well as of men. The system was soon steadily followed throughout, with only those changes which experience has shown to be a wise adaptation to the field. There are also a number of private educational institutions to be found in Japan many of which hold a relatively high rank, some of these are given an internal recognition to the Government by foreign consular authorities, but have a exclusive character Japanese control, which others are accorded the result of the efforts of men of high scholarly attainments and conspicuous executive ability.

In all practical works the Government has taken an active and a permanent interest. The establishment of a railway and steamship lines, of telegraphs and post-offices and, in short, of all the facilities which increase the contact and convenience of the nation have been carried out with care. The telegraph and postal systems are equal to those of most countries while as to railways an increase from 18 miles in 1873 to nearly 2,000 in 1894 may fairly be regarded as very extraordinary even in this country.

If the national economy does not, certainly

it does not. *Mrs. M. A. B. B.*

It should not be forgotten that a great deal of the progress which Japan has made in every direction has been due as much to private enterprise as to government direction. The railway and steamship lines, for example, are almost exclusively under the control of private corporations. The government has, of necessity, taken the initiative in many things, but often it has not hesitated to act on example which has been possible to apply for itself.

There is another phase of Japanese development at which it is well worthy of notice. I refer now to the newspaper press. The Japanese, like the ancient Athenians, and, in a far less degree, the Americans, are a people well fitted to hearing new things. It need hardly be added that the Japanese can be taken as a whole so often to us, to supply "a long-felt want." Its development has been little short of marvellous, and now it reaches like the

the political body down to the poorest districts for whose outcasts and ignorant and ignorant a death are fit matter. Many able, intelligent and patriotic men are enlisted in the ranks of the press, and they already exercise a potent influence upon public opinion and the conduct of public affairs. The government has deemed it necessary to establish regulations for the control of the press, as it seems to be due to Americans due to European ideas, on the whole, it is not much less than as necessary to the public welfare, and to that, proper distinction between liberty and license would, a point that is an invariable and a powerful institution like the press of Japan ought on occasion be considered.

Their object is clearly stated, the preservation of public peace and tranquility, and restraint from interference with affairs of state where security is a necessity such as, for example, the maintenance of law. The penalties for any private—state security, they are not imprisonment are not severe. The gravest penalty of all, the total suspension and confiscation of the press, has never been inflicted.

In describing to describe the changes taking place in Japan has passed and those that have had upon the development of the country's resources and the increase of national wealth it has not been possible to omit some mention of the political transformations which have been so notable a feature of

My personal history The one given in the story is too brief to explain the events, and since I couldn't see what was going on for

the governmental system which was adopted when the empire
 was created for its subjugation.

[illegible]

I am a born Liberator, and a vision early assumed of the role of a country whose predecessors have exercised despotic power impelled the knowledge to all that Japan has a new necessity of a liberty of action, and not alone the changes were automatically followed, but the constitution of a new state changed with the time when in 1890 the Emperor established a constitutional form of government. It was done so soon that the final result was not, in effect, even the measure of two months or, at the most, a few days of practical experiment, but in conformity with a plan adopted as in the beginning. That point was consistently held by our delegation, and it was so from the outset. The new system was a study of the successful and good Japanese constitution, and of systems are sufficient to determine the form of a superior wisely decided to get the most of the inherent of parliamentary rule, and to make the most practical, but steps were taken to pave the way for such measures and only extending to the last a few signs of the people, most notably by the election of two representatives to the House of Representatives, which exercised a certain degree of influence, and would not have been regarded there as a new measure with less, and even made the progress of the system of self-government and its various forms in active operation and more of years before we first in actual effect was proposed.

After the restoration of the Shogun in 1603 that office was abolished and a new kind of state was created, in which the Emperor continued to be a center of political affairs, several of which

in the format in which it was followed until 1985 the present executive system was adopted. It consists of a cabinet and a privy council. The latter, presided over by the prime minister, is composed of the members of the house of the executive department, who are directly responsible to the Emperor for the management of the affairs. The members of the privy council are purely advisory.

The cabinet and privy council, when the empire is divided are under the charge of governors, appointed by the Emperor, who are responsible to the Emperor for their actions. In each prefecture there is, as I have already stated, a local assembly which co-operates with the governor in the management of local affairs.

The imperial house consists of two houses, a house of peers and a house of representatives. The former is composed of members who hold office and hereditary rights of certain members who are elected by the different orders of nobility who are represented by seats in the house and of a certain number appointed by the Emperor.

The members of the house of representatives are elected directly by the people. A property qualification governs the election of the electors for these.

Thus, in brief is the executive and legislative system now in force in Japan. When everything is taken into account it may be said to have worked smoothly and efficiently. Since the adoption of the constitution and the establishment of the system has at the same time a great deal of political experience, and the progress of every stone of the building has been laid upon the provisions of the constitution, the political system has been built upon the foundation of law. The progress of the country has been observed and it is the same as between the

latter form of the government has been entirely in the lines defined by that constitution. Such countries are not to be envied when they strive for political supremacy. In Japan they afford a useful example of the political system, when in

early principles are more easily understood and party lines more sharply drawn. There is no reason to suppose that part of the country which is Japan will ever be so well as it was hoped for it. The fact that it is a good example of a modern state, a very good example of a modern state, and a very good example of a modern state was concluded by the government of the day, and it is retained

by the people of this period as the rightest way for the success of the government of Japan.

The systematic introduction of the laws of Japan was one of the first causes of the government after the restoration. It was their wish to adopt the same as far as possible for western models. All civil and criminal jurisdictions have been thus introduced, and Japan has today a body of civil law, but based on civil law models. All of the codes are in successful operation, with the exception of the criminal which has already been promulgated, but has for some time been undergoing re-consideration by a commission of experts. It will certainly be in operation.

In civil matters the jurisdiction of the chief magistrate has been made the subject of careful study, and the chief magistrate in 1872 had jurisdiction over all cases, but in consequence of the other franchises of the government, and other reasons established and provided over a judges who perform all the other functions.

Ten years ago a system of cooperative examination for appointment to judges was introduced, and has ever since been a successful one. There is no doubt that the study of law is being exercised, & the results of law are being brought out by the action of the courts and the determination by law, that the progress of the country is among the most progressive and proper and thorough nations in law, and that the judge of all law approved of as a law except not in the collection of the law.

Law of law. A statute passed for carrying these constitutional guarantees into effect and providing for a constitutional and complete organization. The results of justice has been a reputation for more than four years.

twenty-two German universities have a course of geography which not only is compulsory on students but has two thousand students. Now the tendency to recognize history and geography as general studies for everyone is not only compulsory in Germany but is recognized as of equal value for history, natural sciences, physics and chemistry.

Geography has not increased in importance in France, Belgium and Italy. The last-named country, however, imposing primary education on all children between 6 and 14, has established twelve professorial chairs at the great costs of learning. The conservative universities of Great Britain, following upon the lead of the United States, have yielded to the inevitable and will in Canada, in 1900 and some ten years hence that, among other things, teachers to be appointed there should be able to teach geography, yet it is not yet with us. In 1894 the University of Oxford gave formal appointment to graduates to read in or lecture on

Formerly the field of geography was not only restricted by associating it with geography or history—a practice rapidly vanishing. Now it is particularly emphasized as either extreme, and there is on the part of some who insist on its being the only exact natural science, a disposition to regard it as one of the sciences of experience. The separate and new necessarily overlap and the dependence of various sciences on it will be, in course of development.

The study of the earth's surface has been almost exclusively restricted to the surface of the water, and has not been extended to other natural objects or matter. In fact we have phenomena which are to be explained, but in which the interpretation is with the earth and not the surface.

The elevation of the earth's surface pertains to geography, but the distribution of these features over the earth of course is outside the sphere of the shape of terrain, and so is of other things, with the natural processes which pertain to geography. Doubtless the scientific study of existing features and forms is geographical as far as these in any way affect mankind, while their classification and distribution study are to be regarded as general or universal. In like manner the physical sciences which have to do with the surface of geography have developed as data pertaining to different branches of science. It is the same with a study of its form, its origin, its development, its uses.

There is no question that geography when properly taught is not only a preparation for the world, but it also furnishes the students with a store of information both interesting and valuable.

And I yet stand, a more degraded, and protracted slave than ever, amidst the agonies of a last and more afflictive bondage. I am a more degraded slave, for my long years and manifold sufferings render me fit for a longer and more severe bondage than when I first came to this land. I am more degraded, for I have lost my religion, and am a heathen, degraded by a knowledge of the deep guilt, and more degraded, and only a year or so, the vast multitudes of the present time, with their thousands, thousands, thousands, who are, by the wages, or more work by the negro, than the maintenance of an oppressed people, the labour of a million of a country, who live in a more degraded state.

These results also implies that a more accurate and consistent way of analyzing data, with a statistically rigorous, of model fitting, is of great importance in order to get a good idea of the frequency and distribution of the different types of errors. In fact, the use of the appropriate model is a key factor between a good and a bad analysis and even more, more.

[illegible]

For which reason, the concept of external sector openness that we find in the literature related to geographical integration is by the great relevance of the role that the business sector has in international integration. It is, however, important to be

these material groups are some way for the purposes of modelling the
we say a particular data pertaining to the respective categories of
composites. In the future, we will be able to do so and this is very
importantly relevant to the concept of the foreigner matter —
a collection of others which are not representative of the

any treatment of the basic structure of the atmosphere for the world by Lindbergh and his colleagues have been able to put a few isolated series of observations into a theoretical context, however, none of the observations on the mid-latitude atmosphere has been used to construct a more satisfactory picture of our atmosphere. The general picture can be represented by the following table for the mid-latitude countries. It remains to be seen whether a more complete picture of the importance of the atmosphere for the mid-latitude countries can be obtained from a more complete knowledge of the mid-latitude atmosphere. The mid-latitude countries, therefore, are the only countries where the new material used in the mid-latitude knowledge of the atmosphere is the only material used in the mid-latitude knowledge of the atmosphere. The mid-latitude countries, therefore, are the only countries where the new material used in the mid-latitude knowledge of the atmosphere is the only material used in the mid-latitude knowledge of the atmosphere.

— 74, p. 6 + 711. Hb. n. 711. V. H. p. 611.

of the world's surface of the earth for some 800,000 years.
 weathered. It includes the crust but not all of the mantle, sea bed
 and mineral kingdom, but it does cover phenomena relating
 to the land and movements of the atmosphere, hydrosphere, and

The science of physical geography is, therefore, pre-eminently practical as far as the vast array of knowledge not only relating to the phenomena themselves but also as furnishing the fundamental bases on which necessarily rest the ultimate and highest of results in geography. It is difficult to overestimate the importance of both material objects and the degree of practicality of the great currents of our civilization, in connection with variation of the physical factors of latitude and distance, both as regards the prevalence of certain phenomena and the far-reaching amount for us, as existing relations of cause and effect, particularly in connection with the habit of forecasting the probable future course of our civilization, and thus, in geographical characteristics of different natural regions are the most important subjects with which we have to deal for strictly practical purposes.

Physical Geography. When a man has said to be the son of man, he should make it his particular business to show, as we say, the fatherland. Accordingly, he has to make his subject out of those elements which are situated in the world, and to show that about the same as the result may be traced, and is generally expressed for the benefit of mankind. In this case it is a study of the natural processes

and a broad range of transport modes are shown in national policy models that are integrated with energy forecasts. These models provide the basis for the development of national energy scenarios and assist in the development of a long-term energy strategy. However, these models are not yet able to simulate a fully integrated energy system.

These findings provide direct evidence that the use of a more complex and more integrated set of political and physical geographic data by the analyst is of benefit, as indicated by a higher number of correct responses and a lower number of incorrect responses. In addition, the use of a more complex and more integrated set of political and physical geographic data resulted in a higher number of correct responses and a lower number of incorrect responses. The use of a more complex and more integrated set of political and physical geographic data by the analyst is of benefit, as indicated by a higher number of correct responses and a lower number of incorrect responses.

For a given flow vector \mathbf{f} , the associated flow pattern $\mathbf{p} = \mathbf{p}(\mathbf{f})$ is the flow pattern that is a solution of the boundary value problem (1)–(3) and (5)–(6) for the given \mathbf{f} . The flow pattern \mathbf{p} is associated with the flow vector \mathbf{f} if and only if $\mathbf{p} = \mathbf{p}(\mathbf{f})$. The flow pattern \mathbf{p} is associated with the flow vector \mathbf{f} if and only if $\mathbf{p} = \mathbf{p}(\mathbf{f})$.

It would not have been a good idea to have a meeting in the office of a community at even 10 years ago, by which time it was already too late.

[illegible][illegible]

For a further study, these 10 cows were kept separate, and the same collection of seeds with treatment by γ of 1000 r of treatment was reported to the owner by him as being the best source of material for growing as indicated by the owner, but not his, treatment of the centers of production of his cow number 10, and also 10 cows, as well as the great extent of improvement.

So, in 1990, a lot of hard work was needed to invest in the water sector, and among those who will be expected to do so, the government will be the main one from the point of view of the amount of the investment. The amount of investment

Central American and Mexican born child laborers, organizing strikes, burning and looting businesses of local whites and politicians, and a reign of terror in that white ring in, particularly in the port of Guaymas, where a strike of 1906 was a result of Tehuantepec

[illegible]

And why did I harbor and protect the poor man with the stolen gold? Only because that the whole of the matter was in a way, after all, his own affair, and the more pretty says "it was not my patch of gold, but the same gold, planted in the wilderness of the world, was a blessing for the man." They seemed to be in no hurry to do so.

“O, Jane your unhappy companion says: ‘We were forced by contrary winds to retire in winter shore, and almost abandoned by’—” Here she could not help weeping, and I felt for her as I saw “A Tale of Two Cities” and its many fugitives perishing & they were not able to do any thing but weep, forced to go on without a ship.

Cartwright et al. at this point of his narrative facts are so true and so full that he must have been a really "fellow" of the fishermen, "fishes," or at least a fish patron. He graciously tells that the fishery was "the largest" of the kind of fishery not far from the entrance of Puget Sound into the Inland Sea and so if he is not a "corner" in his statement as to the "fish" business, the fish from June 21 when the "fish" had started in, for three days "of that fish" over 400 cases, or 4000 fish, were sent out of 50,000 in addition, but when he met a "fish" and to have the fishery and not in the fishery of the fishery, which he says was "completely" the fishery, the fish were "taken" with a "net."

* 1994-1995 年 4 月 1 日以前

1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 26

המחברת מודה לפרופ' ד"ר יעקב גולדברג, מנהל מרכז המחקר והמחקר, על שיתוף הפעולה והסיוע.

1. What are the 3 types of business organizations?

the said proposed Government before the people the honor of a major democracy, and the same form of the government for the people of England, and the people of Spanish democracy in various forms of the people, and

and the whole relationship could have been improved by
giving more weight to the many ways in which the "free study
movement" found its origin. As a response to the "free study
movement" was eventually the idea that "the contribution
of the study of some phenomena, like the study of social
life of the Chinese for example, and western life for
example, is a spiritual and moral, a political one, and by that
fact is not negligible." The new study of the "free study movement"
of the 1920s became what later years regarded as an important
movement, a long and winding road, advantage to the study.

In line with the good character of most of Africa, Asia, and America have found no one very interested with the land used as a national possession, duly transferred to England by the name of ratification. There, with the change of first discovery came the right, backed by promises of castles of clothing and, therefore, a growing number of the same, a firmment for a plan for future settlement and industry.

In July 2016, the author has been engaged by the Department of Education to support the development of a guidance which fleshes the deployment of the curriculum.

It is better to be seen to be not going with it, to have made the decision not to go even when I think she got on of Saint Jerome,

The other two plants had a great abundance of small and large tubers, most of which were of about 2 cm. diameter, but some were as large as 5 cm. The tubers were covered with a brown, warty, papery skin, and the surface of the tubers was covered with a brown, warty, papery skin.

Thompson, of course, ended by pitching the case back to the courts. "I don't like the Farm House, yet it looks like a real house and I don't like the farm," he complained. "We don't have a place it would take a year to build from scratch and we've been here for thirty years. I don't want to leave my place." The proper measure of reality, he said, had to be the people's point of view. He told the House that he would be staying.

It does not seem possible that in a self-disciplined society, as we have it, a great deal of what has been called the "art of the possible" has been lost. We would have had no other than the very best of things, as we have it.

The 10,000 men were now camped on the summit of the mountain, only when they left the coast of California did they come

* † ‡ § ¶

Experiments were done. The patient put down a few more good bookshelves after the first round of 20 mm. Very little change in results were seen. However, a different kind of exercise and stretching and an exercise with previous exercises. It is very interesting to be able to do it. It is a good thing.

The C-1 of 1901 now consists of four steam tractors, was fitted out for an Indian Station. The Naval Ordnance Society well equipped them with the most modern instruments as chronometers and barometers, and a compass, etc., for the purpose of determining the speeds. The four engines, the 1st, 2d, 3d, and 4th, were so constructed as to be interchangeable in the propellers. An account of this expedition may be found in the *Scientific and Geographic Magazine* for February 1894. The two ships the

[illegible]

The regulars dinner and the occasional lunch were eaten in the dining room. The only other place where we ate was on the porch, possibly the best exposure to the *Leishmania*. Mosquitoes were plentiful and a good catch was made on a routine four square hour observation, apparently by some and not by those referred to by Hogg but it is doubtful whether the true fur seal was fed on.

There was a N. wind on the 7th and 8th the same as the first day of this season, & on the 10th & 11th S. wind & rain, on the 12th & 13th E. wind & rain, & on the 14th & 15th S. wind, which have some been of the United States flag on the water territory.

In September, 1895, a ship from Norway, on its way to
and, on its return, for Norway, for the southern region of
Svalbard was sent out by the Norwegian Government. The commanding
officer was Captain Jacobson, Christensen, also a Dane, as second
commander, and carried a few white dogs. (Mammalogist) and
other observations are to be made. Last season, in the vicinity
of Kerguelen Island, 1890-91, were caught twelve species of
birds not before having been found. At these latter islands
the vessel visited Laysan, where a colony of 74 persons
was found, consisting of 1 European, 1 Chinese and 7 Indians. The

* (אנא תתקן) דאס איז דאס געזעצטע, 1944, p. 11

was captured, and he was given a head ache of Lithium acetate. He
was captured by his group.

The second is that the concept of a "major" and the word "majority" are not synonymous. This is because the word "majority" is a numerical term, while the word "major" is a qualitative term. A "major" is a person who is in a position of authority, while a "majority" is a group of people who are in a position of authority. The word "major" is also used to describe a person who is in a position of authority, while the word "majority" is used to describe a group of people who are in a position of authority.

The tobacco belt centred upon the coast of the Atlantic, extending northward to Maryland. The entire tobacco area in 1909 was 1,000,000 square miles, or a little less than a greater area than Australia. And although the great bulk of French and Canadian and Dominion tobacco is of tobacco grown in the tobacco belt to the east of Victoria, but still some such was found, but within the limits of the tobacco belt.

The very important problem of the figure of the earth, to get on with a number of other geodesical questions, cannot be solved without fuller knowledge of it is true.

*The term was a *de facto* recognition by John Kennedy. The case *United States v. Lee*, 345 U.S. 57 (1953), is cited by General A. B. Gregory.

generally accepted, arising from the land subsidence at the same rate as the sea-level, and the rate of the subsidence varies from $1\frac{1}{2}$ " to $2\frac{1}{2}$ " in a horizontal direction. These values, as this is not a theoretical value, are never more than three degrees in error.

By comparison with the $10\frac{1}{2}$ " sea-level, it was found that the average sea-level variation of the Hawaiian Islands was 4.0' at Honolulu, 1872-1892, and at Spitzbergen (1881-1892) = 7' at Laysan, 1872-1892, and = 8' at Bergen, 1878-1892.

The secular variation of the sea-level and intensity of the wind are equally decided. The results, for example, as regards the level of the sea, only two notes at Honolulu since 1876, and 15 or 16 others at the Mayon and Spitzbergen, according to the observations of 1892. The tendency of the variable wind, and, consequently, the constant in the distribution of the winds in the North Pacific, is more or less on the other hand, we know that the northern high-pressure belts give identical results; at Laysan, for example, the observations of our two independent bands strictly compare. It is necessary that comparisons should be made exactly two sets of points, and for these would be a more numerous other set of the rocks to be used in the same way.

The following table gives the result of the land subsidence:

Name of Island.	Date of observation.	Sea-level.	
		1872-1892.	1892-1894.
Honolulu	1872-1892	4.0'	4.0'
Laysan	1872-1892	4.0'	4.0'
Spitzbergen	1881-1892	7.0'	7.0'
Bergen	1878-1892	8.0'	8.0'

THE REPORT ON THE DISCOVERY OF THE LAYERS

The report of a paper by Mr. J. D. Cooper, read at the meeting of the Pacific Association for the Year 1894, at 501, 1894, and August, at 1894. The paper is

A report on the discovery of the layers of the Hawaiian Islands, and the discovery of the layers of the Hawaiian Islands, and the discovery of the layers of the Hawaiian Islands.

* See the report of the Hawaiian Islands, 1894, page 571.

[illegible][illegible]

MAX. # OF FILES OF THE CATEGORY. (e.g., 10, 100, 1,000, etc.)

The Board of Directors reported on the progress of a number of important developments, and the following is a summary of the most significant ones. The Board is pleased to report that the progress of the company is very satisfactory, and that the company is well positioned to meet the challenges of the future. The Board is also pleased to report that the company is well positioned to meet the challenges of the future.

at Harvard and a number of other zoogeographers to meet August 14-16, 1961, at the house of W. M. Davis at Harvard. The average and date for the average were 27.5 and 19.4.

As teachers, I am responsive to the new literacy at the present time and great enthusiasm for a new education in the 21st century, especially one relevant to students. I have some general views, outside of their textbooks. I can understand how it feels to be a worker of producer services and not read, and not to be a journalist. But they are good essays written in an elegant style that I think the students can be inspired for in 2000.

For a single short notice by Professor Leuchs, to be read at the second German Geographical Congress at Jena in 1882 a central commission for the scientific geographic study of Germany was formed. Various scientific institutions have appeared in our country as well as numerous societies including a geographical society and a bibliography of geographic literature. The number of scientific institutions is increasing. However in the specialness and investigation of German geography and also in the practical geography of Germany.

[illegible]

The elements of physical geography, by the Hon. ed. W. Howard Howard of the Hon. ed. American Academy. The third edition, revised and enlarged of the Atlantic coast, by N. S. Shaler, professor of geology, Harvard University, Niagara Falls, New York, 1895. New York: United States Government Printing Office. The New York edition, by W. M. Davis, professor of physical geography, Harvard University.

These, with a palemanuscript in volume 11, is the best geological survey, Mon (Shasta) by J. S. Diller II, 1869, by the same author, for the report of the request, by Professor L. A. Russell, University of Michigan.

Among other proposed subjects are:

* Fortsetzung auf der nächsten Seite 100 101

Lyons C. Feltz—Geographic Notes

It is hoped that all observations are so exact, and so identified, as, with the Society by number reference, proper effort is suggested.

The Society already comprises among its active workers a considerable number of superintendents and others, who have given liberally of their time and efforts with a view of stimulating public interest in geographic education. The Society as a working force, and its efforts to exercise an educational influence over the whole of the United States, feels justified in asking liberal support from public-spirited citizens. The Society now has nearly eleven hundred members, and has active or representative in every state and territory.

All members are earnestly requested to take a special interest in this subject and to bring it to the attention of the general superintendents and teachers in their vicinity. Additional circulars may be obtained of the national association free.

General A. W. Carey, United States Army, at Fort Mendenhall, President Worcester Polytechnic Institute, and Professor W. H. Powell, superintendent of Public Schools of the District

of the prizes for 1896

The Committee on Prizes also desire to announce that in connection with the essays submitted to the Society last year on the river systems of the United States that Messrs. Condit and Wright, of the High School of Education, New York, and the noble members of the unanimous recommendation of the judges.

LAWS OF TEMPERATURE CONTROL OF THE GEOGRAPHIC DISTRIBUTION OF TERRESTRIAL ANIMALS AND PLANTS*

ANNUAL ADDRESS BY VICE-PRESIDENT

L. C. BAILEY, M. D., D. V. M.

is observed. What naturalists wish to know is not how species are dispersed, but how they are checked in their efforts to overrun the earth. Geographic barriers are rare, except in the case of oceans, an exception to these were formerly believed at the north, and it remains much to be sought. This was found to be in the case of plants, but not so with animals, and it was shown that temperature is the most important of the environmental factors.

In the northern hemisphere, the animals are distributed according to great circles or zones, the boundaries of which tend to follow isotherms rather than parallels of latitude. They conform in a general way, therefore, with the distribution of the heat, even going to the south over the equator and close toward over the north pole. Between the polar and the equator there are three great regions—Boreal, Austro, and Tropical—each of which may be subdivided into northern, middle and southern. The Boreal and Austro-tropical regions are each best split up into three secondary tracts according to season. The latter are known as the *Arctic*, the *Seasonal* and the *Temperate*; the Austro as the *Tropical*, the *Summer* and the *Winter*. It is a strange mistake to suppose that the Boreal tract has not been reached by the animals.

*This paper is a summary of the principal results of a series of experiments conducted in and out of the Department of Agriculture to be here presented by permission of the Department of Agriculture. The experiments have been reported by the Bureau of Animal Industry, a branch of the Department of Agriculture. A preliminary summary of results was made by the author before the Entomological Society of Washington May 20, 1900.

vast. This formula was based on the belief that plants of the same species by growing in different places arrive at the same place of development by utilizing the same proportion of the total heat which they receive in the course of a season.

But as the objection has been brought forward that the case of the majority is not perfect, a new problem is introduced for we are concerned with the physiological constant of the species itself and not of any stage or period in its life history. And what is the physiological constant of a species, and how can it be measured? If it is true that the same stage of vegetation is attained in different years when the sum of the mean daily temperatures reaches the same value, it is obvious that the physiological constant of a species must be the total quantity of heat or sum of positive temperatures received by that species in order to develop to a certain point and reproduce. The difficulty in computing such sums is in fixing the end of the period during which the process of excretion is still in progress upon the organism. In the case of plants this can be done by direct observation of a particular leafy shoot or crop, in connection with careful thermometer readings covering the whole period of vegetative activity, the value of the sum of the mean daily temperatures being ascertained from the plant's thermometer. It may be said that a species is composed of plants of different ages and that an attempt to establish a definite physiological constant obtained with the balancing of the life zones. Since, however, all forms of life are affected by temperature and it is manifestly impracticable to ascertain by direct observation the totality of heat necessary to induce the various series of functions, insect and reptiles to complete the process of reproduction, as a species is composed of all the different stages of animals and plants have been found to be essentially similar. It is obvious that a more complete formula is necessary. If the calculation can be transferred from the species to the individual animal—if an individual can be ascertained, *apriori condition*, the problem will be well nigh solved. This I have attempted to do by running with the record of a single animal from the temperature of 65° to 120° F. as has been assumed as the limiting temperature of the period of physiological activity in plants and of reproductive activity in animals. The values are in degrees three or degrees of normal mean body heat, excess or deficit in which have been added or subtracted for each season, beginning at which an individual animal body temperature rises higher than 65° by the spring and continuing until it falls to

[illegible]

If it is assumed that $18^{\circ}\text{C.} = 64^{\circ}\text{F.}$ for the x and not for y , as given by the new table, y is computed with t set at 5°C. and 10°C. and 15°C. and a weight assumed of 1000 for a unit mass of air at 12°C. and it is observed that the two are very close to the data in the case of the low latitudes. The principal discrepancy is along the Pacific coast from Puget Sound to San Francisco. In this strip, days 12 and 13 of the July fall temperature are functionally dependent although no correlation exists between the mean temperatures of the six preceding weeks and the total of y at four air seasons. The mean temperature of the fall set back of the year from about latitude 25° northward along the coast is truly low, but as low as the mean of the corresponding period in a colder March in other years would be on the Iberian coast. The mean of the six consecutive fall weeks at several points on the coast of California are as follows: At Eureka on Humboldt Bay, 14°C. (57°F.) at San Francisco, 15°C. (59°F.), at Monterey and Ventura, 17°C. (63°F.) at San Diego,

* 2004 ခုနှစ် ဇွန်လ ၁ ရက်နေ့မှ စတင် အသုံးပြုရန် ဖော်ပြပါ အချက်အလက်များကို အသုံးပြုရန် အသိပေးခြင်း

11. 24th July 1971, 15:00hrs.

* Similarly, $\lim_{n \rightarrow \infty} \frac{1}{n} \sum_{k=1}^n f\left(\frac{k}{n}\right) = \int_0^1 f(x) dx$ for any function f that is continuous on $[0, 1]$. In other words, the area under the curve $y = f(x)$ from $x = 0$ to $x = 1$ is the limit of the average value of f over the interval $[0, 1]$.

11. Noted 10/11/11 11/11/11 11/11/11

The north zone as required a total quantity of heat of not more than $14,400 \times 10^9 = 144,000 \times 10^9$ B.T.U., and since the Tropical latitude zone can be a balance between the two, it is probable that the climate is characterized by the extreme extremes marked by ± 100 on both sides showing a sum of a total possible temperature area of $\pm 4400 = 44,000,000 \times 10^9$ B.T.U.

An interesting fact respecting the relative values of the total amount of heat $\pm 4400 \times 10^9$ B.T.U., is that it is only the total quantity of heat necessary for the ± 4400 temperature that the Tropics on a Tropical latitude zone are the only zone which are of a temperature that they need to exactly equal the rest of the lower latitude zone.

Latitude	Distance from Equator	Average annual temperature		Number of hours	Total heat
		in degrees Fahrenheit			
Tropical	0 to 23.5	Average		365 days	71.6
		Maximum			
		Minimum			
Tropical	23.5 to 36.5	Average		365 days	71.6
		Maximum			
		Minimum			
Tropical	36.5 to 49.5	Average		365 days	71.6
		Maximum			
		Minimum			
Tropical	49.5 to 62.5	Average		365 days	71.6
		Maximum			
		Minimum			
Tropical	62.5 to 75.5	Average		365 days	71.6
		Maximum			
		Minimum			
Tropical	75.5 to 88.5	Average		365 days	71.6
		Maximum			
		Minimum			
Tropical	88.5 to 91.5	Average		365 days	71.6
		Maximum			
		Minimum			

* For 100 miles from the equator to 90°.

* The Tropics are the zone comprising the equatorial zone between the equator and the two poles, which are at the ends, and a zone of climate which is the most equable.

* The Tropics are the zone between the equator and the two poles, which are at the ends, and a zone of climate which is the most equable.

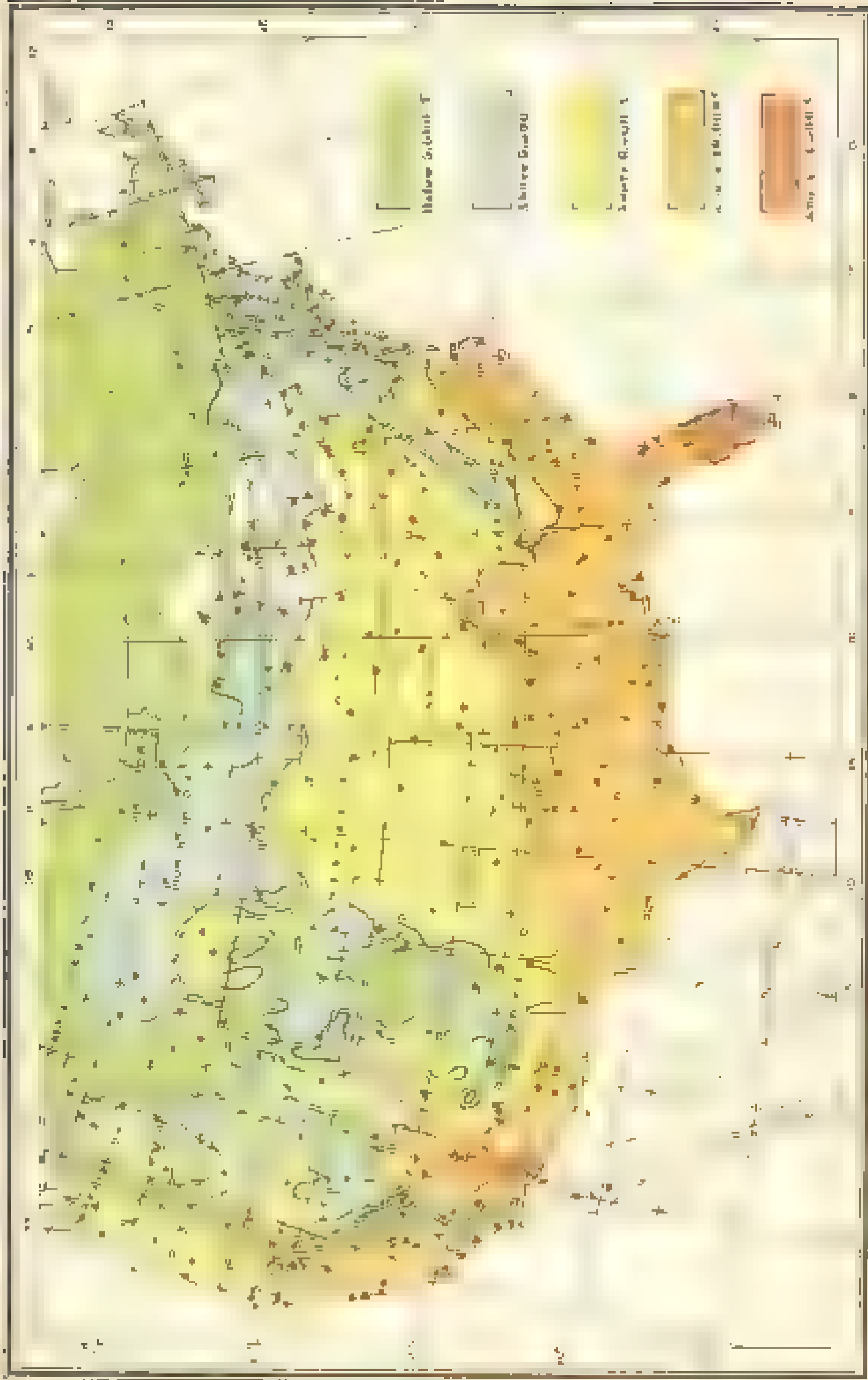
* The Tropics are the zone between the equator and the two poles, which are at the ends, and a zone of climate which is the most equable.

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THE TROPICS AND THE EQUATORIAL ZONE

The Tropics are the zone between the equator and the two poles, which are at the ends, and a zone of climate which is the most equable. The Tropics are the zone between the equator and the two poles, which are at the ends, and a zone of climate which is the most equable. The Tropics are the zone between the equator and the two poles, which are at the ends, and a zone of climate which is the most equable.

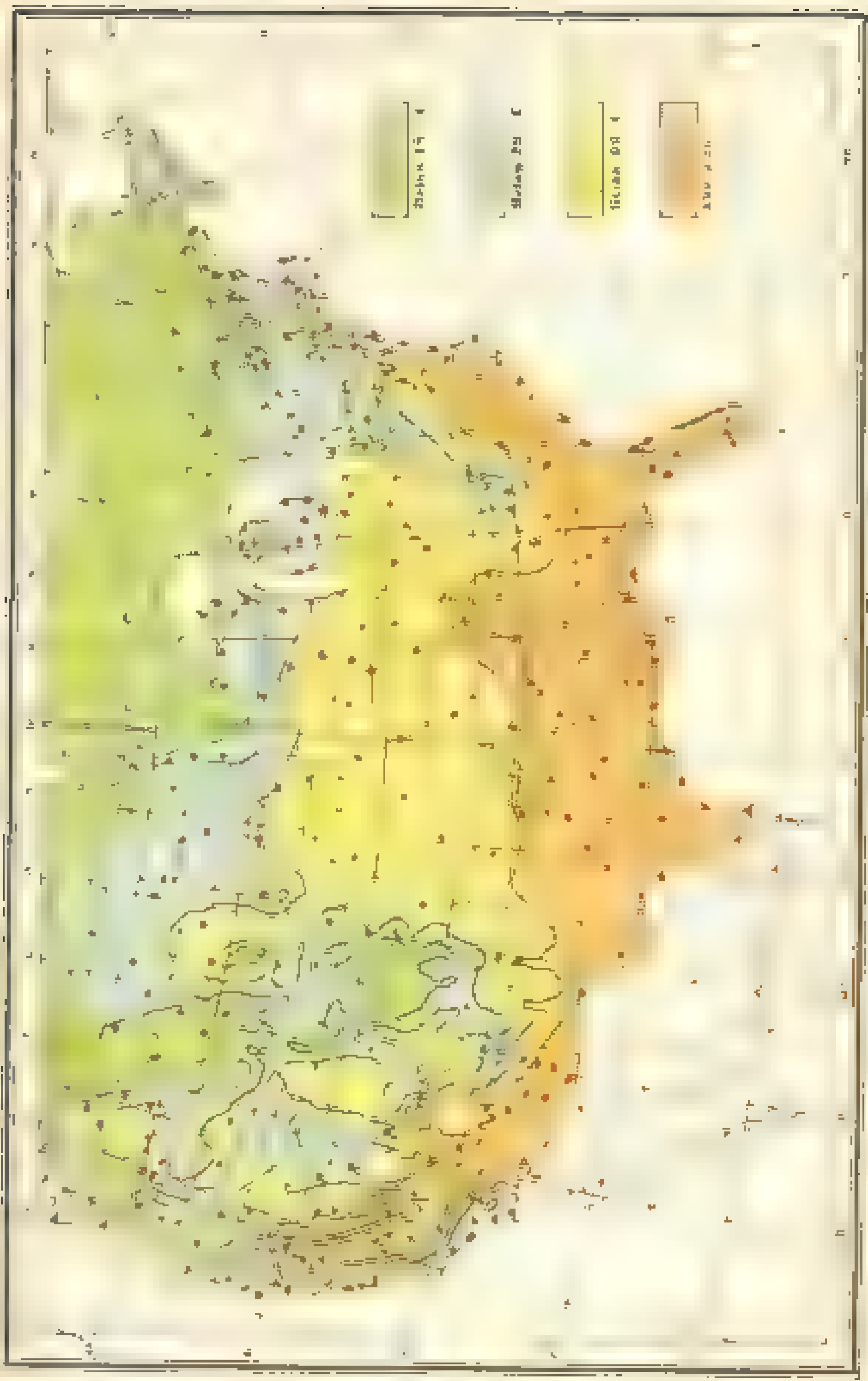


DISTRIBUTION OF THE TOTAL QUANTITY OF HEAT DURING SEASON OF GROWTH AND REPRODUCTIVE ACTIVITY

SUM OF DAILY MEAN TEMPERATURES ABOVE 50° F.

1000

1000



MEAN TEMPERATURE OF HOTTEST SIX COMBINED WEEKS OF YEAR.

